



TITLE:

Studies on the Reduction Process of Metallic Oxides by Means of the Electron Microscope

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CITATION:

Sasaki, Nobuji ...[et al]. Studies on the Reduction Process of Metallic Oxides by Means of the Electron Microscope. 京都大学化学研究所報告 1952, 28: 57-57

ISSUE DATE:

1952-03-30

URL:

<http://hdl.handle.net/2433/74410>

RIGHT:

5. Study on Surface Electricity. (XII)

Capacity Measurement at Mercury-solution Interfaces by Impedance Matching Method. (3)

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We measured the capacities at mercury-m. KCl, -m. KBr, -m. KNO₃aq. interfaces at various polarising potentials (from 0V. to -1.5V. viz. large mercury electrode at the same solution) by the use of "Impedance Matching Method," on which we had related in the preceding papers (this Bull., 24, 12 (1951), 25, 30 (1951)). In order to alter the preciseness of the data we measured only the output voltage and the load impedance and calculated the power supplied to the load by the formula (power)=(voltage)²/(resistance). By this the measurement was simplified too. The other points were quite the same as the former device.

The capacities at positively polarised side against electrocapillary maximum was larger than that at negatively polarised side, and humps were seen at every capacity-potential curves near the electrocapillary maximum.

6. Studies on the Reduction Process of Metallic Oxides by Means of the Electron Microscope

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A specimen-treating adaptor for the electron microscope has been constructed, by which we can first observe a freshly prepared specimen without exposing it to the injuring action of air, and secondly take microphotographs of one and the same part of a specimen before and after it is subjected to a certain physical or chemical treatment and detect by comparing them even minute change the treatment has affected.

The processes of reduction and subsequent oxidation of WO₃, MoO₃ and pure and promoted Fe₃O₄ were followed by means of the adaptor.